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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,743	10/01/2004	Jerome K. Hastings	ETC7455.065	5742
27060	7590	08/17/2006	EXAMINER	
ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (EATON)			NGUYEN, VINH P	
14135 NORTH CEDARBURG ROAD			ART UNIT	
MEQUON, WI 53097			PAPER NUMBER	

2829

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/711,743	Applicant(s) HASTINGS ET AL.	
	Examiner VINH P. NGUYEN	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15 and 25-31 is/are allowed.
- 6) ☒ Claim(s) 16, 17, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 18-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. Since generic claim 1 and 25 are allowable, non-elected claims 10-13 and 26-28 have been rejoined and examined
2. Claims 1,25 and 31 are allowable since the prior art does not disclose an anti-differential current sensor configured to monitor magnetic flux about the conductor and in combined with other claimed elements. Since claims 2-15 and 26-30 depend from allowable claims 1 and 25, these claims are allowed accordingly. Currently claims 1-15 and 25-31 are allowable.
3. The disclosure is objected to because of the following informalities:

In the specification, it is unclear how the conductive wire spirals (62) in the first column are associated with the conductive wire spirals in the second column. Furthermore, it is also unclear what six rectangular elements connected to four conductive wire spirals (62) are and how they are interconnect with the conductive wire spirals (62). The description of the six rectangular elements are not fully disclosed, therefore their functions are not clear.

Appropriate correction is required.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of two hall effect sensors disposed proximate the conductor" as recited in claims 2,6,7,8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 16-17,23-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Civil et al (Gr # 2,255,645A).

As to claim 16, Civil et al disclose a current sensor as shown in figure 1 having at least one spiraled helix conductive path (8) configured to receive a current flow therethrough and concentrate magnetic flux induced by the current flow through the at least one spiraled helix conductive path (8) and at least one Hall effect sensor (4) positioned proximate to the at least one spiraled helix conductive path (8) configured to sense the magnetic flux and provide a signal indication of the current flow through the spiraled helix conductive path (8).

As to claim 17, it appears that the Hall sensor is configured to provide a determination of a magnitude and direction of current flow through the helix conductive path (8).

As to claim 23, Civil et al also disclose a current sensor as shown in figure 2 having the first and second Hall sensors (4,10) disposed within the at least one spiraled helix conductive path (8).

As to claim 24, it appears that the current sensor of Civil et al is substantially free of ferromagnetic flux concentrating device.

7. Claims 18-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 18 is allowable since the prior art does not disclose at least one spiraled helix conductive includes a first spiraled conductive path having a first hall effect sensor positioned proximate thereto and a second spiraled conductive path having a second hall effect sensor positioned proximate thereto and in combined with other claimed elements.

Claim 19 is allowable since the prior art does not disclose the first spiraled conductive path includes a first direction of spiraling and the second spiraled conductive path includes a second direction of spiraling and wherein the first direction of spiraling and the second direction of spiraling are substantially opposite in direction and in combined with other claimed elements.

Since claims 20-22 depends from claims 18-19, they are allowed accordingly.

8. Applicant's arguments filed on 06/05/06 have been fully considered but they are not persuasive.

Applicants argue that the conductive path coil (8) is not a spiral helix since it is formed by laying an electrically conductive metal track about the device (4). Furthermore, Applicants define "helix" is a widely recognized mathematical term defined as "a three dimensional curve that lies on a cylinder or cone, so that its angle to a plane perpendicular to the axis is constant".

Examiner disagrees with Applicants about those issues. From the first-third page of Dictionary.com cited by Applicants, the term "helix" has several definitions. Examiner considers

the definition on the first page, the second definition “a spiral form or structure” would fit the description of the coil (8) of Civil et al. Therefore, this art of record still reads on the limitations of the instant claims 16-17 and 23-24.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH P. NGUYEN whose telephone number is 571-272-1964. The examiner can normally be reached on 6:30AM-4:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HA T. NGUYEN can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


VINH P NGUYEN
Primary Examiner
Art Unit 2829
08/11/06